

Appl. No. 10/747,923  
Amdt. dated December 28, 2007  
Reply to Office Action of September 28, 2007

### REMARKS

Applicants' attorney thanks the Examiner for the attention given to the present application. Claims 1-69 are presented for the Examiner's consideration. Claim 1 has been amended to incorporate the limitations of claim 2. As a result, claim 1 additionally recites that the attachment means has a packing density of at least 500 hairs per square millimeter. Support for this amendment can be found in originally filed claim 2, as well as page 2 lines 16-17 of the Specification. Claim 5 has been amended to recite a gecko-like adhesive fastener. Support for this amendment can be found in the specification on page 5 lines 20-23, page 22 lines 10-11 and page 25 lines 22-23. Claim 5 has been amended to recite that the adhesive hairs have a diameter of about 0.05 microns to about 50 microns. Support for this amendment can be found in the Specification on page 6 lines 22-23. Claims 52-68 are withdrawn. Claims 2 and 69 have been canceled.

In the Office Action dated September 28, 2007 the Office rejects claims 1-51. Pursuant to 37 C.F.R. § 1.111, reconsideration of the present application in view of the foregoing amendments and the following remarks is respectfully requested.

#### **1. Claim 5 rejected under 35 U.S.C. §112.**

In the Office Action dated September 28, 2007, claim 5 was rejected under 35 U.S.C. §112, second paragraph for allegedly failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. More specifically, the Office contends that the phrase "gecko-like" renders the claim indefinite because the claim allegedly includes elements not actually disclosed (i.e., the suffix "-like"), thereby rendering the scope of the claim unascertainable.

In response, Applicants have amended claim 5 to include the term "adhesive" such that claim 5 now recites "gecko-like adhesive fastener." Support for this amendment can be found in the specification on page 5 lines 20-23, page 22 lines 10-11 and page 25 lines 22-23. Applicants respectfully note that in accordance with MPEP § 2173.05(a), an applicant is free to be his or her own lexicographer, and an applicant may use terms in a manner contrary to or inconsistent with one or more ordinary meanings if the written description clearly defines the terms. Applicants have provided such a definition for the term "gecko-like adhesive" in the specification (Specification

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page 5 lines 20-23). Thus, use of the term "gecko-like" in amended claim 5 meets the requirements of 35 U.S.C. §112, second paragraph.

For at least these reasons, Applicants respectfully submit that the rejection of claim 5 under 35 U.S.C. §112, second paragraph has been overcome. Applicants respectfully request that this rejection be withdrawn.

**2. Claims 1-19, 24, 26, 27, 37-46 and 49-51 rejected under 35 U.S.C. §102(b)/§103(a).**

In the Office Action dated September 28, 2007, claims 1-19, 24, 26, 27, 37-46 and 49-51 were rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as being obvious over U.S. Patent Publication No. 2002/0138064 to Datta et al (hereinafter "Datta").

**a. Claims 1-19, 24, 26, 27, 37-46 and 49-51 are not unpatentable under 35 U.S.C. 102(b).**

Claim 1 has been amended to incorporate the limitations of claim 2. Thus, claim 1 additionally recites that the attachment means has a packing density of at least 500 hairs per square millimeter. Support for this amendment can be found in originally filed claim 2, as well as page 2 lines 16-17 of the Specification.

Claim 5 has been amended to recite that the adhesive hairs have a diameter of about 0.05 microns to about 50 microns. Support for this amendment can be found in the Specification on page 6 lines 22-23.

In accordance with MPEP § 2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

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Amended claim 1 of the present invention requires a nanofabricated attachment means, which is defined in the specification (see e.g., page 5 lines 20-23). In contrast, Datta does not disclose a nanofabricated attachment means.

In addition, amended claim 1 also requires adhesive hairs disposed on a flexible substrate (Specification page 6 lines 11-35 and Figure 1). In contrast, Datta discloses a hook for a hook-and-loop type fastening system (Datta para. 0070, 0073 and Fig 5). It is noted that in the present Office Action, the Office equates the "hooks" of Datta with the "hairs" of the present invention (Office Action dated September 28, 2007 page 3). Applicants disagree that the hooks of Datta can be equated to the hairs of the present invention, and respectfully direct the Office's attention to Figure 1 of the present invention versus Fig. 5 of Datta which demonstrates at least the physical differences between hairs and hooks. In addition, Applicants respectfully note that such hooks also require an engaging material such as a loop material (Datta para. 0072 and 0076) whereas the hairs of the present invention do not require a loop material. Rather, the hairs of the present invention mimic gecko setae and attach to substrates via adhesive forces, such as van der Waal and capillary forces (Specification page 5 lines 31-33, page 6 line 16 and page 14 lines 6-7). Lastly, the hooks of data are manufactured by injection molding, which could not produce the minute hairs of the present invention (Datta para. 0074). In contrast, the hairs of the present invention are made by nanotechnology processes such as nanolithography, ion etching, laser nanomachining, nanoimprinting, molecular self-assembly, electron-beam lithography, and other processes known in the art of nanotechnology (Specification page 5 lines 25-29).

Furthermore, amended claim 1 also requires a packing density of at least 500 hairs per square millimeter. In contrast, Datta discloses a packing density of at most 16 hooks per square millimeter (i.e., 1600 hooks/cm<sup>2</sup>) (Datta para. 0071). It is respectfully noted that in the present Office Action, the Office states that Datta discloses a packing density of 16-620 hooks per square centimeter, or 1,600-62,000 per square millimeter (Office Action dated September 28, 2007 page 4). However, Applicants respectfully note that to convert from hooks per square centimeter to hooks per square millimeter, one must divide by 100, rather than multiply by 100. As a result, the

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packing density of hooks set forth by the Office should have been 1.6-62 hooks per square millimeter, rather than 1,600-62,000 hooks per square millimeter.

Thus, each and every element of independent claim 1 is not found, either expressly or inherently described, in Datta.

With respect to dependent claim 3, in addition to the shortcomings of independent claim 1, Datta does not disclose a hair diameter of 50 microns or less, and Datta does not disclose an average height-to-diameter ratio of about 3 or greater. It is respectfully noted that in the present Office Action, the Office proposes a mathematical computation using the "Aspect Ratio" formula of Datta to allegedly determine the diameter of the hooks of Datta (Office Action dated September 28, 2007 page 4). Notwithstanding the fact that Datta discloses hooks and not hairs (as discussed above), the mathematical computation does not seem to be correct. Datta specifically discloses that the Aspect Ratio is measured as the aggregate hook head area divided by the overall area of the hook component (Datta para. 0076, para. 0077, Fig. 5 and Fig. 5A). Simply stated, it is a measure of the hook head size with respect to the overall hook (Id.). In contrast, the hairs of the present invention do not include a hook head, as can be seen in Figure 1 of the present invention. In fact, the fastener of the present invention is disclosed to be a replacement for a hook-and-loop attachment means (Specification page 8 lines 33-35). Furthermore, the Aspect Ratio calculation does not result in a diameter of the hook of Datta as proposed by the Office. This seems to make sense since, as can be seen in Fig. 5 of Datta, since the stem of the hook is not hair-like, but rather has a pyramid shape. Thus, the elements of claim 3 are not found, either expressly or inherently described, in Datta.

With respect to dependent claim 4, since claim 4 incorporates all of the limitations of independent claim 1, each and every element of claim 4 is also not found, either expressly or inherently described, in Datta, as discussed above for claim 1.

Independent claim 5 requires a gecko-like adhesive fastener, which is defined in the specification as discussed above. Claim 5 further requires adhesive hairs. In contrast, Datta does not disclose a gecko-like fastener, but rather discloses a hook (see e.g., Datta para. 0070-0077).

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Independent claim 5 also now requires that the hairs have a height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns. In contrast, Datta does not disclose a height of about 0.5 microns to about 8 millimeters and a diameter of about 0.05 microns to about 50 microns (e.g., see discussion above regarding the Aspect Ratio calculation). In addition, based on the fact that the hooks of Datta are produced by an injection molding process rather than by a nanotechnology process, one of ordinary skill in the art would recognize that such a diameter would not be present in the hooks of Datta.

Thus, each and every element of claim 5 is not found, either expressly or inherently described, in Datta.

With respect to dependent claims 6-19, 24, 26, 27, 37-46 and 49-51, these claims incorporate all of the limitations of independent claims 5. Thus, each and every element of claims 6-19, 24, 26, 27, 37-46 and 49-51 are also not found, either expressly or inherently described, in Datta for the reasons discussed for claim 5.

For at least these reasons, Applicants submit that the rejection of claims 1-19, 24, 26, 27, 37-46 and 49-51 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §102(b) be withdrawn.

**b. Claims 1-19, 24, 26, 27, 37-46 and 49-51 are not unpatentable under 35 U.S.C. 103(a).**

In order for the Office to show a prima facie case of obviousness, MPEP §2143 requires that the Office must meet three criteria: (1) the prior art references must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to combine the references; and (3) there must be some reasonable expectation of success. Applicants respectfully submit that requirement (1) is not met based on amended independent claims 1 and 5 as the references do not teach or suggest all of the claim limitations of Applicants' recited invention.

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**i. Requirement (1) of the test under MPEP §2143 is not present.**

With respect to requirement (1), Datta does not teach or suggest all of the claim limitations. In particular, as presented in the independent claims, and thus also their dependent claims, independent claims 1 and 5 each contain at least one element not found in Datta.

With respect to claims 1, 3 and 4, there is no teaching or suggestion in Datta for at least the following elements: 1) a nanofabricated attachment means, 2) adhesive hairs disposed on a flexible substrate, 3) the attachment means has a packing density of at least 500 hairs per square millimeter (see above for a discussion as to each of these elements). Furthermore, as discussed above, there is no teaching or suggestion in Datta for hairs having an average diameter of about 50 microns or less and an average height-to-diameter ratio of about 3 or greater, as required by claim 3.

With respect to claims 5-19, 24, 26, 27, 37-46 and 49-51, there is no teaching or suggestion in Datta for at least the following elements: 1) a gecko-like fastener and 2) a hair height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns (see above for a discussion as to each of these elements). Furthermore, besides the fact that the hairs of the present invention do not include a hook, the diameter of the hairs is such that they reasonably would not provide enough strength/integrity to function as a hook in accordance with the teachings of Datta.

For at least these reasons, Datta does not teach or suggest all of the claim limitations of 1-19, 24, 26, 27, 37-46 and 49-51, as required by the first prong of the test set forth by MPEP § 2143.

**c. Claim 1 not product-by-process.**

In the present Office Action, the Office alleges that the limitation of a nanofabricated attachment means is a product-by-process claim, and that the prior art product, although made by a different process, is same (Office Action dated September 28, 2007, page 3-4). Applicants respectfully disagree that the limitation of a nanofabricated attachment means is a product-by-process claim. Rather, the limitation defines the structure of the attachment means. In fact, the specification provides several nanotechnology processes which can be utilized to produce a

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nanofabricated attachment means (see e.g., Specification page 5 lines 25-29). Thus one of ordinary skill in the art would recognize that a nanofabricated attachment means is not a product-by-process claim, but does in fact describe the structure.

However, even if the limitation of a nanofabricated attachment means was a product-by-process claim, the products of the present invention and that of Datta are clearly different. For example, the nanofabricated attachment means of the present invention is produced using a nanotechnology process, whereas the hook of Datta is produced using injection molding (compare Specification page 5 lines 25-29 versus Datta para. 0074). In addition, the nanofabricated attachment means of the present invention comprises minute hairs which resemble those found on the foot of a gecko, whereas the mechanical fastening material of Datta comprises hooks for a hook-and-loop type fastening system, such as Velcro® (compare Specification page 11 lines 23-25 and Figure 1 versus Datta para. 0073 and Fig. 5). Furthermore, the nanofabricated attachment means of the present invention utilizes adhesive forces (e.g., van der Waal and capillary forces) for attachment, whereas the mechanical fastening material of Datta utilizes a fastening material, such as a loop material, to engage the hooks (compare Specification page 14 lines 6-7 versus Data para. 0071). Still further, Applicants disclose that the nanofabricated attachment means of the present invention can actually be a replacement for a hook and loop system (Specification page 3 lines 34-35). Thus, for at least these reasons, one of ordinary skill in the art would readily recognize that the nanofabricated attachment means of the present invention is not the same as mechanical fastening material of Datta.

**d. Hindsight would be improper.**

Any attempt to modify Datta to arrive at Applicants' invention could only be accomplished through the teachings of Applicants, which would result in improper hindsight. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Gordon*, 733 F.2d at 902, 221 USPQ at 1127. *In re Fritch*, 23 USPQ 2nd 1780, 1783-1784 (Fed. Cir. 1992). It is impermissible to use the claimed invention as an instruction manual or "template"

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to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 Fed. 2d 982, 987, 18 USPQ 2d 1885, 1888 (Fed. Cir. 1991).

As discussed above, Datta does not teach or suggest: 1) a nanofabricated attachment means, 2) adhesive hairs disposed on a flexible substrate, 3) the attachment means has a packing density of at least 500 hairs per square millimeter, and such knowledge could only be gleaned from Applicants' disclosure. The knowledge to arrive at Applicants' formulation was simply not available until it was disclosed by Applicants in the present specification. One of ordinary skill in the art would not have, and could not have, arrived at Applicants' invention without the use of Applicants' disclosure, which the Office has the benefit of using. Thus, the use of hindsight to arrive at Applicants' invention would be improper.

**e. Conclusion.**

For at least these reasons, Applicants submit that the rejection of claims 1-19, 24, 26, 27, 37-46 and 49-51 has now been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**2. Claims 20-23 rejected under 35 U.S.C. §103(a).**

In the Office Action dated September 28, 2007, claims 20-23 were rejected under 35 U.S.C. §103(a) as being obvious over Datta in view of PCT Publication No. WO 01/49776 to Full et al. ("Full"). With regard to claim 20, the Office utilizes Full to allegedly teach a hair that is hollow. With regard to claim 21, the Office utilizes Full to allegedly teach carbon nanotubes. With regard to claims 22 and 23, the Office utilizes Full to allegedly teach hollow nanotubes.

Applicants disagree that Full teaches hairs that are hollow. For example, the Office cites Full page 16 lines 5-10; however, there is no mention of hairs that are hollow in this citation. The Office also cites Full page 13 lines 29-30; however, there is no mention of hairs that are hollow in this citation either. The Office also cites Full page 14 lines 19-20; however, this citation is directed to the equipment used to make the product of Full, not to hairs that are hollow. The Office further



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cites Full page 15 lines 9-10; however, this citation is directed to the rigid substrate required by Full, not to hairs that are hollow.

In addition, as discussed in the Appeal Brief submitted by Applicants dated May 14, 2007, Full discloses a hard and rigid substrate. In contrast, Datta discloses a more flexible substrate. In further contrast, the tubes of Full do not comprise hook heads, and the tubes of Full would likely not have the strength and integrity required by the hooks disclosed in Datta. Thus, one of ordinary skill in the art would not combine Full with Datta, since the invention of Datta would not work if the teachings of Full were utilized. It is apparent that the references teach away from each other.

Lastly, even if the references were combined, Datta in view of Full does not overcome the deficiencies of Datta with respect to independent claim 5 and its respective dependent claims 20-23, as discussed above.

For at least these reasons, Applicants submit that the rejection of claims 20-23 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**3. Claims 25, 28-30 and 34 rejected under 35 U.S.C. §103(a).**

In the Office Action dated September 28, 2007, claims 25, 28-30 and 34 were rejected under 35 U.S.C. §103(a) as being obvious over Datta in view of U.S. Patent No. 4,323,069 to Ahr et al. ("Ahr"). With regard to claim 25, the Office utilizes Arh to allegedly teach a liquid-impervious apertured web. With regard to claim 28, the Office utilizes Arh to allegedly teach an apertured film coated with acrylic adhesive. With regard to claims 29 and 30, the Office utilizes Arh to allegedly teach an apertured film coated with acrylic adhesive which can allegedly be either hydrophilic or hydrophobic. With regard to claim 34, the Office utilizes Arh to allegedly teach a substrate that is substantially elastic and homogenous.

However, Datta in view of Ahr does not overcome the deficiencies of Datta with respect to independent claim 5 and its respective dependent claims 25, 28-30 and 34 (e.g., a gecko-like fastener; and a hair height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns).

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For at least these reasons, Applicants submit that the rejection of claims 25, 28-30 and 34 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**4. Claims 31 and 32 rejected under 35 U.S.C. §103(a).**

In the Office Action dated September 28, 2007, claims 31 and 32 were rejected under 35 U.S.C. §103(a) as being obvious over Datta in view of U.S. Patent No. 4,716,067 to Moji et al. ("Moji"). With regard to claim 31, the Office utilizes Moji to allegedly teach an apertured film with an integrated embedded fastener having a substrate comprised of titanium that is subsequently anodized. With regard to claim 32, the Office utilizes Moji to allegedly teach the fastener having a substrate comprised of titanium that is subsequently anodized and is capable of absorbing UV light.

However, Datta in view of Moji does not overcome the deficiencies of Datta with respect to independent claim 5 and its respective dependent claims 31 and 32 (e.g., a gecko-like fastener; and a hair height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns).

For at least these reasons, Applicants submit that the rejection of claims 31 and 32 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**5. Claims 33, 35 and 36 rejected under 35 U.S.C. §103(a).**

In the Office Action dated September 28, 2007, claims 33, 35 and 36 were rejected under 35 U.S.C. §103(a) as being obvious over Datta in view of any of U.S. Patent No. 4,593,418 to Simon ("Simon"), U.S. Patent No. 5,354,597 to Capik et al. ("Capik") and U.S. Patent No. 5,354,597 to Dreier ("Dreier"). With regard to claim 33, the Office utilizes Simon, Capik and Dreier to allegedly teach attachment tabs having elastomeric materials. With regard to claims 35 and 36, the Office utilizes Simon, Capik and Dreier to allegedly teach attachment tabs having elastomeric materials or regions.

However, Datta in view of Simon, Capik and Dreier does not overcome the deficiencies of Datta with respect to independent claim 5 and its respective dependent claims 33, 35 and 36 (i.e., a

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gecko-like fastener; and a hair height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns).

For at least these reasons, Applicants submit that the rejection of claims 33, 35 and 36 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**6. Claims 47 and 48 rejected under 35 U.S.C. §103(a).**

In the Office Action dated September 28, 2007, claims 47 and 48 were rejected under 35 U.S.C. §103(a) as being obvious over Datta in view of any of U.S. Patent No. 4,299,223 to Cronkite ("Cronkite") and U.S. Patent No. 5,279,604 to Robertson et al. ("Robertson"). With regard to claim 47, the Office utilizes Cronkite and Robertson to allegedly teach a release material. With regard to claim 48, the Office utilizes Cronkite and Robertson to allegedly teach a removable cover.

However, Datta in view of Cronkite and Robertson does not overcome the deficiencies of Datta with respect to independent claim 5 and its respective dependent claims 47 and 48 (e.g., a gecko-like fastener; and a hair height of about 0.5 microns to about 8 millimeters, and a diameter of about 0.05 microns to about 50 microns).

For at least these reasons, Applicants submit that the rejection of claims 47 and 48 has been overcome. Applicants respectfully request that this rejection under 35 U.S.C. §103(a) be withdrawn.

**7. Timely Response.**

The due date for replying to the present Office Action is December 28, 2007. This Response is timely filed on December 28, 2007.

**8. Conclusion.**

For the reasons stated above, it is respectfully submitted that all of the presently presented claims are in form for allowance. Applicants intend to be fully responsive to the outstanding Office Action. If the Examiner detects any issue which the Examiner believes Applicants have not

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addressed in this Response, Applicants' undersigned attorney respectfully requests a telephone interview with the Examiner.

The Applicants sincerely believe that this Patent Application is now in condition for allowance and, thus, respectfully request allowance.


The Commissioner is hereby authorized to charge any prosecutorial fees (or credit any overpayment) associated with this communication to Kimberly-Clark Worldwide, Inc. deposit account number 11-0875. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such extension is requested and should also be charged to our Deposit Account.

The undersigned may be reached at: (920) 721-4405.

Respectfully submitted,

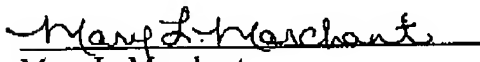
JEFFREY D. LINDSAY ET AL.

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#### CERTIFICATE OF TRANSMISSION

I, Mary L. Marchant, hereby certify that on December 28, 2007 this document is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (571) 273-8300.

  
Mary L. Marchant